FIG.1

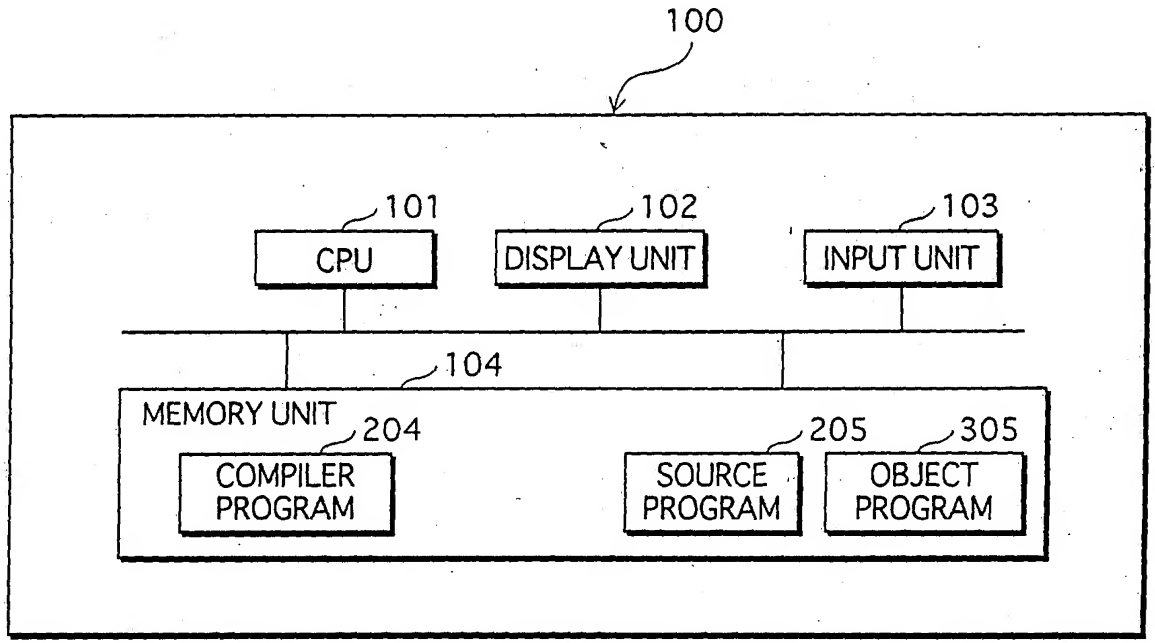

100
101
CPU
102
DISPLAY UNIT
103
INPUT UNIT
104
MEMORY UNIT
204
COMPILER PROGRAM
205
SOURCE PROGRAM
305
OBJECT PROGRAM

FIG.2

```
                void dummy1(char);
                void dummy2(int);
                void dummy3(char*);
                void dummy4(double*);

100             void
101             f(void)
102             {
                    .
                    .
                    .
110             char a;
111             int b;
112             char c[19];
113             double d[4];
                    .
                    .
                    .
140             dummy1(a);
141             dummy2(b);
142             dummy3(c);
143             dummy4(d);
                    .
                    .
                    .
199             return;
200             }
```

FIG.3

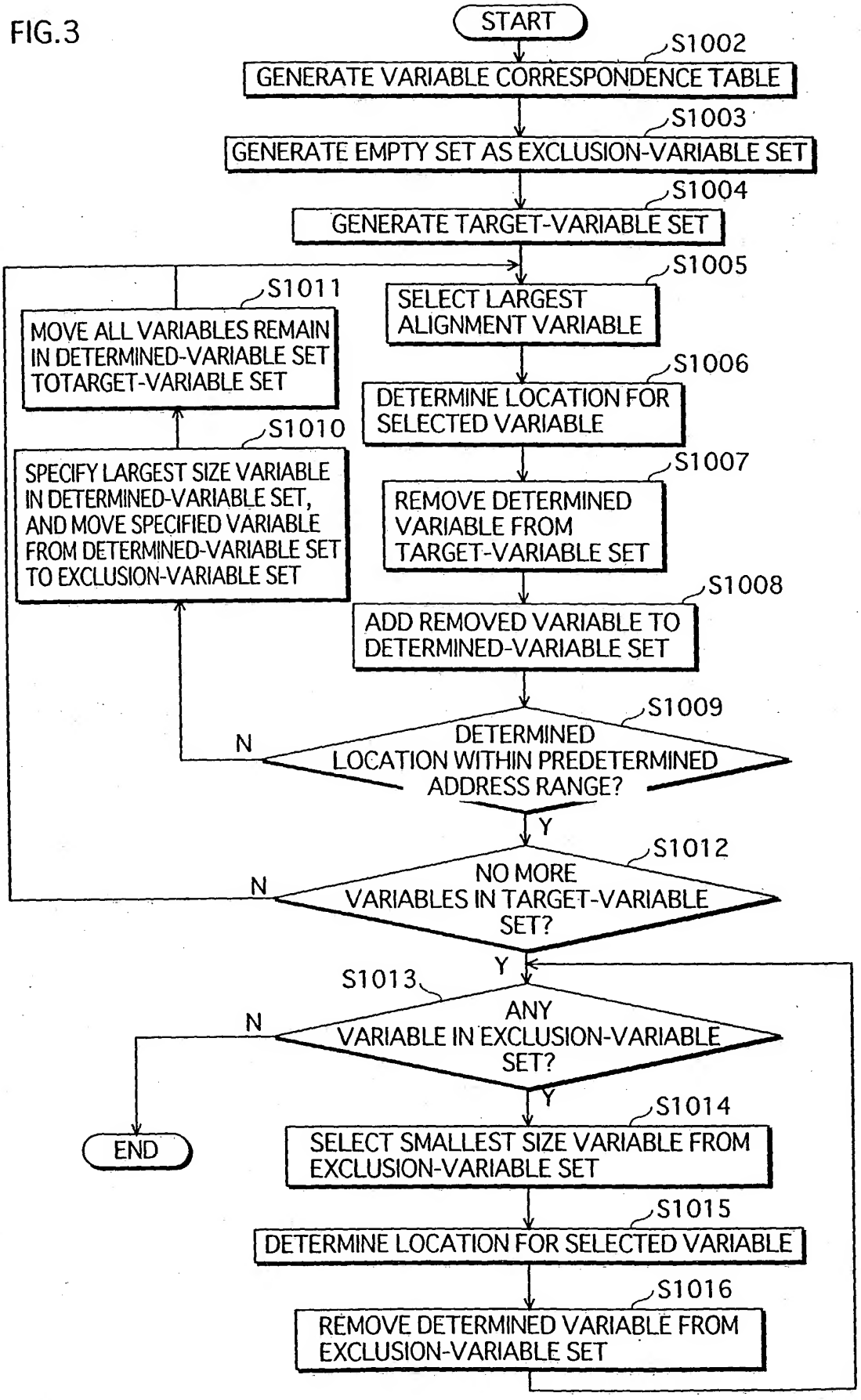

START
S1002
GENERATE VARIABLE CORRESPONDENCE TABLE
S1003
GENERATE EMPTY SET AS EXCLUSION-VARIABLE SET
S1004
GENERATE TARGET-VARIABLE SET
S1005
SELECT LARGEST ALIGNMENT VARIABLE
S1006
DETERMINE LOCATION FOR SELECTED VARIABLE
S1007
REMOVE DETERMINED VARIABLE FROM TARGET-VARIABLE SET
S1008
ADD REMOVED VARIABLE TO DETERMINED-VARIABLE SET
S1009
DETERMINED LOCATION WITHIN PREDETERMINED ADDRESS RANGE?
N
Y
S1010
SPECIFY LARGEST SIZE VARIABLE IN DETERMINED-VARIABLE SET, AND MOVE SPECIFIED VARIABLE FROM DETERMINED-VARIABLE SET TO EXCLUSION-VARIABLE SET
S1011
MOVE ALL VARIABLES REMAIN IN DETERMINED-VARIABLE SET TOTARGET-VARIABLE SET
S1012
NO MORE VARIABLES IN TARGET-VARIABLE SET?
N
Y
S1013
ANY VARIABLE IN EXCLUSION-VARIABLE SET?
N
Y
END
S1014
SELECT SMALLEST SIZE VARIABLE FROM EXCLUSION-VARIABLE SET
S1015
DETERMINE LOCATION FOR SELECTED VARIABLE
S1016
REMOVE DETERMINED VARIABLE FROM EXCLUSION-VARIABLE SET

FIG.4

TYPE	VARIABLE NAME	SIZE	ALIGNMENT
char	a	1	1
int	b	4	4
char[ ]	c	19	1
double[ ]	d	32	8

FIG.5

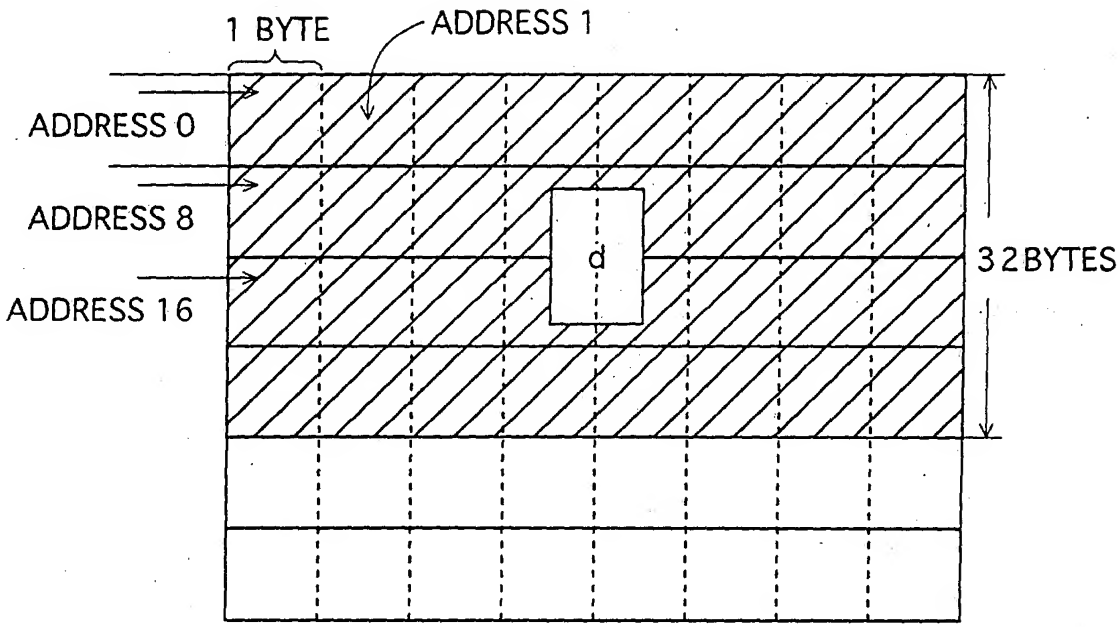


FIG.6

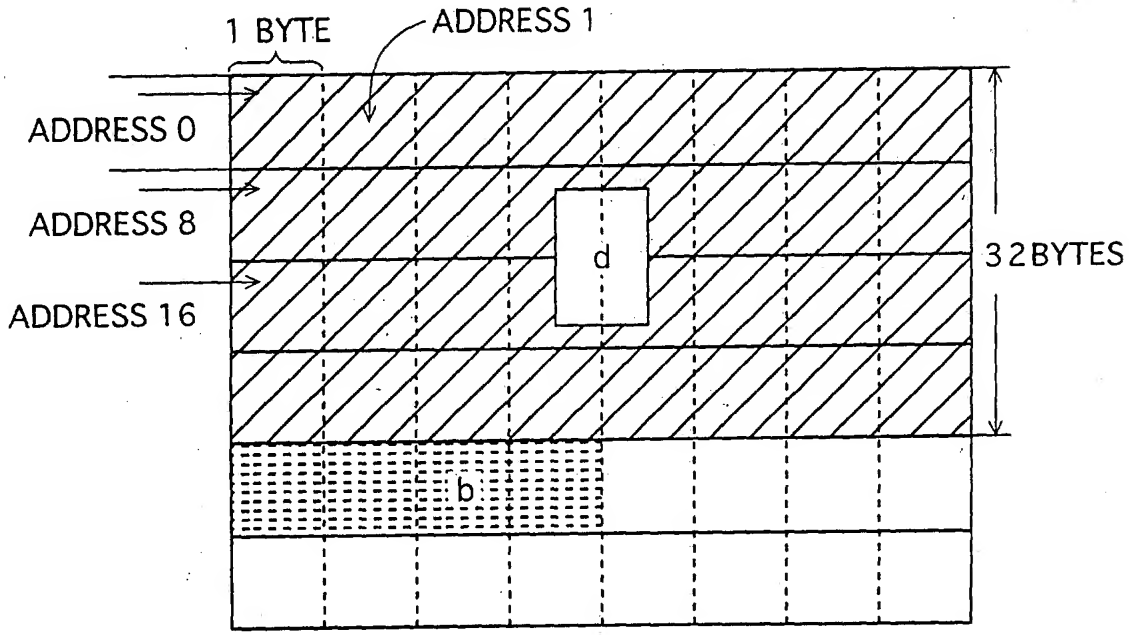


FIG.7

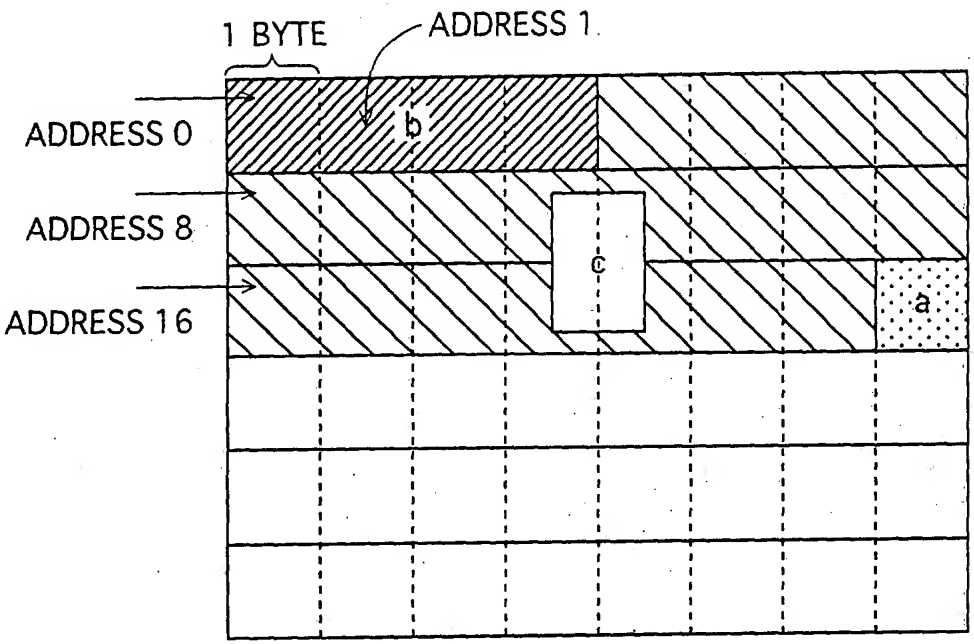


FIG.8

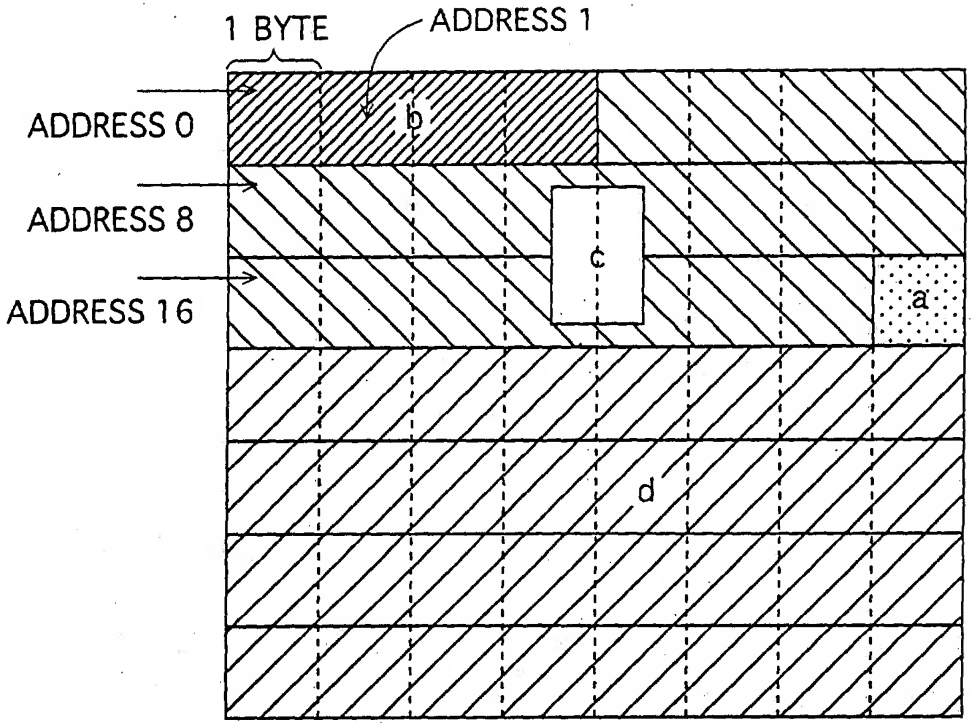


FIG.9

```
210     ld1  r0,(sp,23)  //ACCESS TO a
          .
          .
          .
220     ld4  r0,(sp,0)  //ACCESS TO b
          .
          .
          .
230     ld1  r0,(sp,4)  //ACCESS TO c
          .
          .
          .
240     ld8  r0,(sp,24)  //ACCESS TO d
          .
          .
          .
```

FIG.10

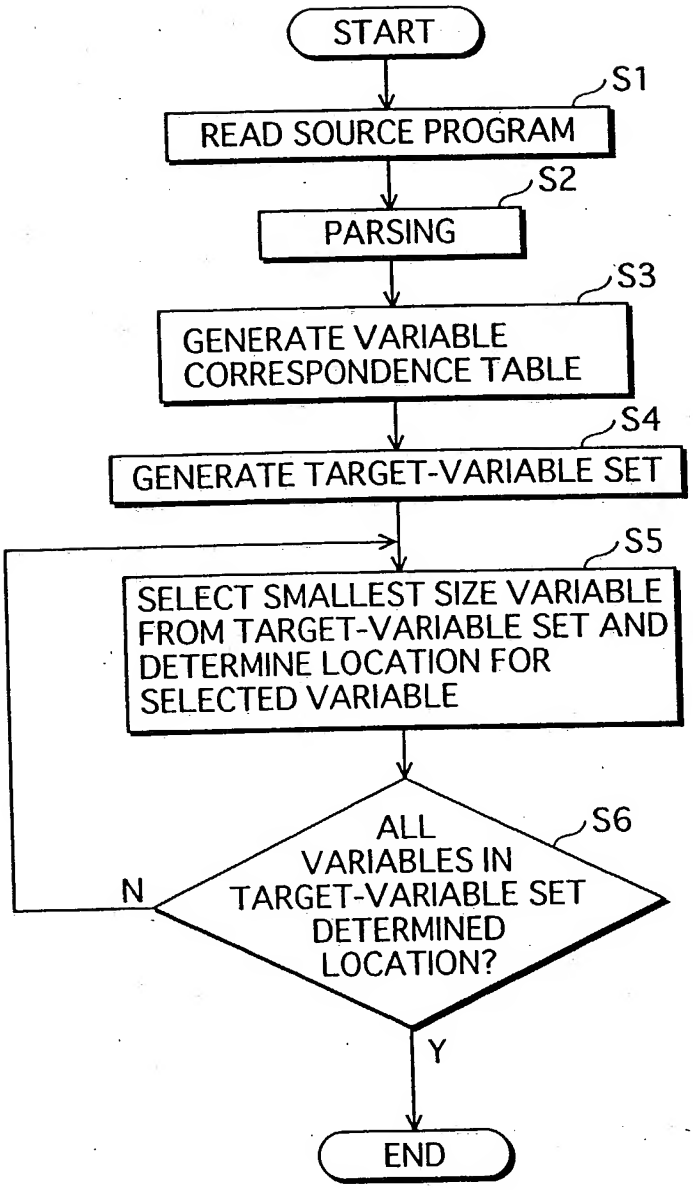
```
310     ld1  r0,(sp,0)   //ACCESS TO a
          .
          .
          .
320     ld4  r0,(sp,4)   //ACCESS TO b
          .
          .
          .
330     ld1  r0,(sp,8)   //ACCESS TO c
          .
          .
          .
340     mov r1,32        //ACCESS TO d
350     ld8  r0,(r1)     //ACCESS TO d
          .
          .
          .
```

FIG.11

```
410     mov r1,55       //ACCESS TO a
420      ld1  r0,(r1)   //ACCESS TO a
          .
          .
          .
430     mov r1,32       //ACCESS TO b
440      ld4  r0,(r1)   //ACCESS TO b
          .
          .
          .
450     mov r1,36       //ACCESS TO c
460      ld1  r0,(r1)   //ACCESS TO c
          .
          .
          .
470      ld8  r0,(sp,0) //ACCESS TO d
          .
          .
          .
```

FIG.12

Prior Art



Prior Art

FIG.13

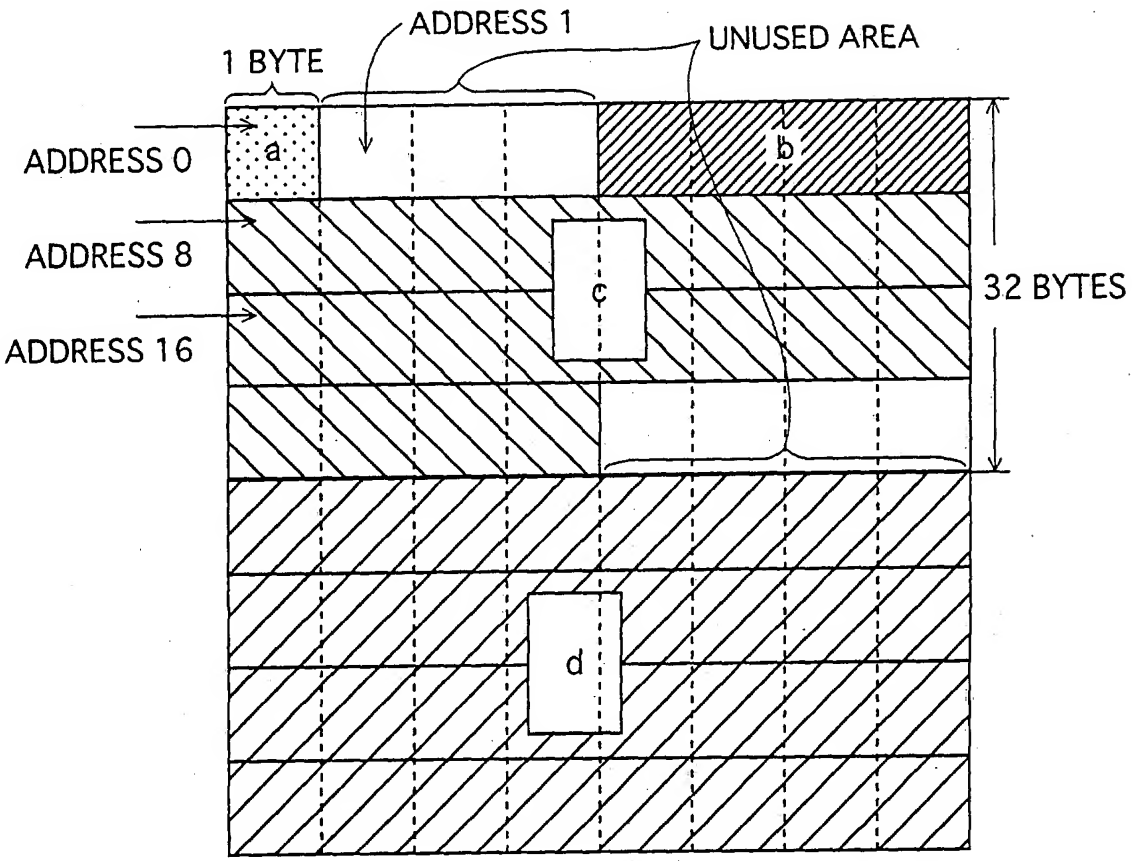


FIG.14

Prior Art

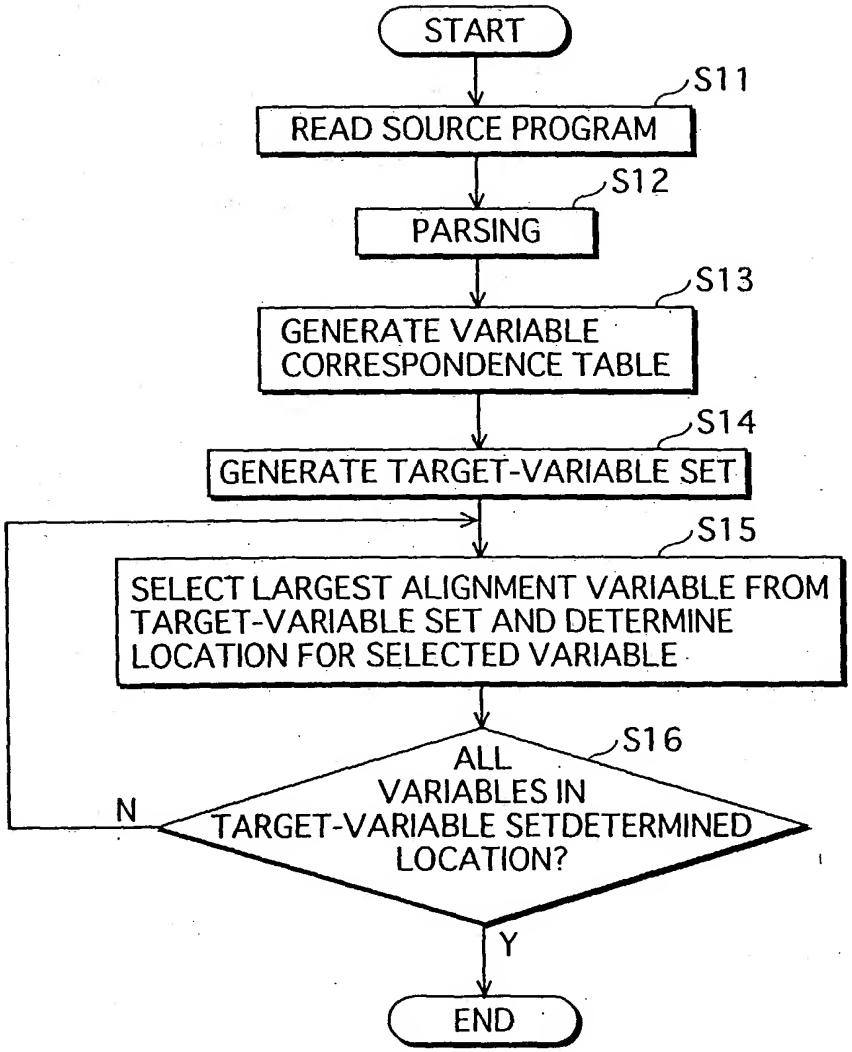


FIG.15

Prior Art

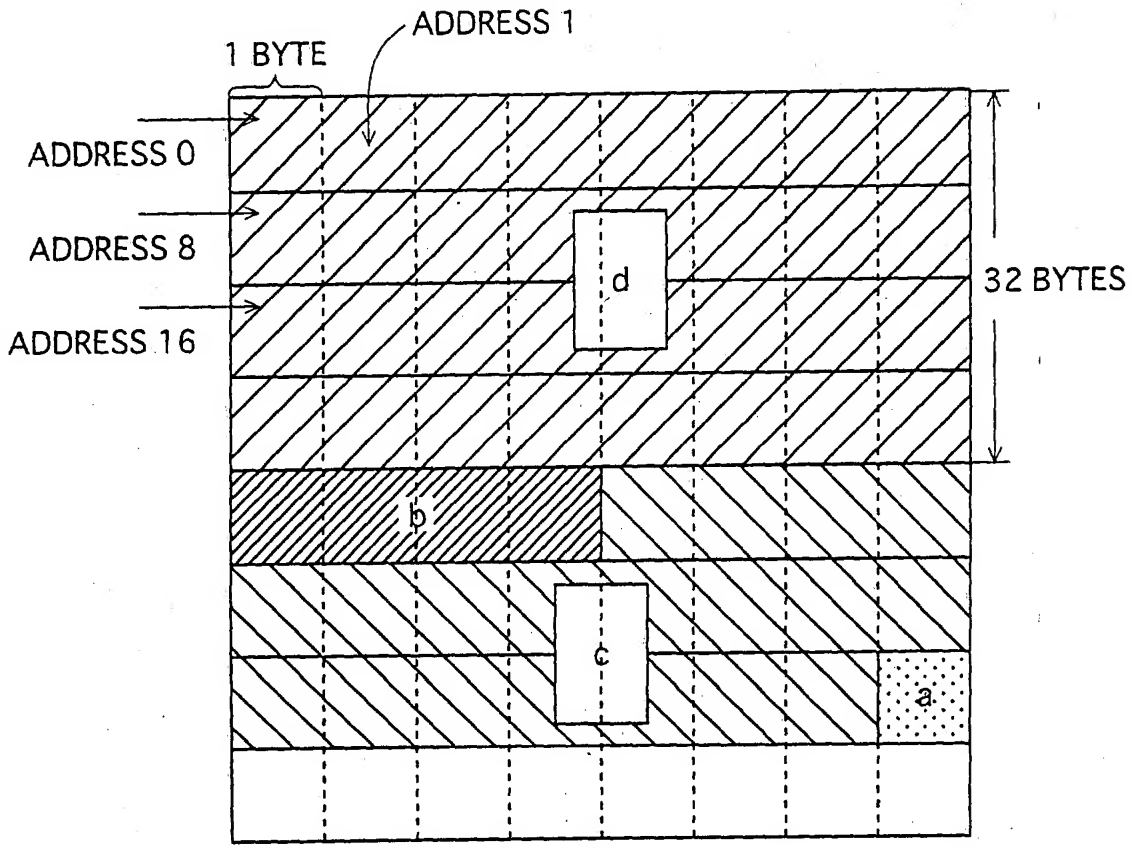


FIG.16

TYPE	VARIABLE NAME	SIZE	ALIGNMENT	REFERENCE FREQUENCY
char	a	1	1	5
int	b	4	4	45
char[ ]	c	19	1	7
double[ ]	d	32	8	4